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Published in:
Explore: The Journal of Science and Healing

DOI:
10.1016/j.explore.2018.12.001

Published: 11/06/2019

Document Version
Peer reviewed version

Recruiting older men to walking football: A pilot feasibility study

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Abstract

Context: Walking football (soccer) has recently emerged as a physical activity option targeted at older males to enhance health and wellbeing.

Design: This pilot study aimed to examine the feasibility of recruiting and retaining males aged 50 years and over to an 8-week walking football programme in a professional football club.

Intervention: Participants were recruited via social media and assigned to an intervention group or a wait-list control group. The intervention group engaged in 1 hour of walking football a week led by a community coach from the professional football club, followed by an optional social session in the club facility. Physiological and psychological outcome measures were obtained onsite at the football club facility (aiding compliance and retention) at baseline and following 8-weeks, from both groups. Semi-structured interviews were conducted after the 8-week programme and 1 year later, to explore motivations for engagement and the social impact.

Results: The opportunity to engage in football and the link to a professional football club were key attractions. All participants recruited were overweight, sedentary, exhibited blood pressures outside normal ranges, and all but two were hypertensive. Adherence to the programme was 90% over 8 weeks, and of the participants who were contacted after one year, all (n = 6) had maintained engagement in walking football. Walking football is therefore a feasible, cost-effective method of recruiting and retaining males aged 50 years and over to a physical activity programme, though attrition is to be expected.

Key Words: healthy ageing, intervention, male, physical activity, soccer

Recruiting older men to walking football: A pilot feasibility study

Introduction

With demographic data indicating the global population to be an ageing one, as evidenced by the increasing share of persons aged 60 years or over (United Nations, 2015), public health organisations now face an array of social and economic challenges. Specifically, whilst conditions such as obesity, cardiovascular disease, and type-2-diabetes constitute major causes of death globally (World Health Organization, 2015), it is those over the age of 50 years that carry the greatest proportion of this chronic disease burden (Dhalwani et al., 2016). Similarly, older individuals are vulnerable to mental health issues with symptoms of loneliness and low self-esteem commonly arising in later life (Stessman, Rottenberg, Shimshilashvili, Ein-Mor, & Jacobs, 2014; Shaw, Liang, & Krause, 2010). Notwithstanding the significant personal consequences for those affected, the economic burden placed on society by such disorders is vast (Wang, McPherson, Marsh, Gortmaker, & Brown, 2011). Cost-effective strategies aimed at promoting healthy ageing and the prevention of chronic conditions are therefore highly desirable. Walking football (soccer) has recently emerged as a physical activity (PA) targeted at older adults, and particularly males over 50 (Arnold, Bruce-Low, and Sammut, 2015; Reddy et al., 2017); however, further research is required to examine the feasibility and attraction of this form of PA within such cohorts.

Current PA guidelines propose that individuals who accumulate 150 minutes of moderate-to-vigorous physical activity (MVPA) per week can benefit from substantial improvements in health and wellbeing (World Health Organization, 2010). Yet, objectively measured accelerometer findings from the US and UK show that only 10-15% of older adults

meet these minimum recommended levels, and PA levels tend to decline dramatically with age (Sparling, Howard, Dunstan & Owen, 2015). Older individuals also often suffer from a lack of social engagement, resulting in loneliness and lower levels of psychological wellbeing (Victor, Scambler, Bowling, & Bond, 2005). Regular PA has been associated with significant improvements in psychological wellbeing in older adults (Fox, Stathi, McKenna, & David, 2007), and walking at a moderate pace has been suggested to expend sufficient energy to meet the definition of MVPA, and bring improvements in cardiorespiratory fitness (CRF), diastolic and systolic blood pressure (BP), and body-mass index (BMI) (Ainsworth et al., 2000; Anton, Duncan, Limacher, Martin, & Perri, 2011; Murtagh et al., 2015; Okura et al., 2016). Suitable PA interventions should therefore be encouraged to aid healthy ageing and psychological wellbeing, but evidence shows current interventions aimed at reducing social isolation often come too late in life (Glymour & Osypuk, 2012). Despite the many benefits of walking, advice to be more active has only resulted in short-term effects, leaving scope for more attractive, structured PA initiatives (Hillsdon, Thorogood, White, & Foster, 2002).

Older men are less likely to engage with established forms of group PA such as walking groups, as these fail to match their interests or sense of male identity (Baker, 2012). Football can act as a draw for men to engage in weight-management schemes (Hunt et al., 2014). Walking football is a variant of association football and has been targeted at those over the age of 50 years (Reddy et al., 2017). Although based upon the principles of association football, running and slide-tackles are not permitted in walking football (Hampshire FA, 2015). Importantly, such restrictions are likely to decrease the risk of injury and facilitate engagement by individuals who are less mobile. The potential of walking football to engage less active populations is therefore promising. Walking has been shown to bring about improvements in measures of psychological and physiological health (Martin, Rothstein & Larish, 1992; Fox et al., 2007; Murtagh et al., 2015; Okura et al., 2016) and

through the added attraction of a football element it is reasonable to assume older men may maintain engagement in walking football into later life (Nielsen et al., 2014).

Although studies have been conducted on the impact of walking football on physiological measures of wellbeing, little detail is provided regarding the demographic of participants (Arnold, Bruce-Low, and Sammut, 2015; Reddy et al., 2017). Furthermore, these studies either involved mixed gender participants or only attracted those aged over 60, thus whether this form of intervention would be suitable and attractive to younger male participants (aged 50) is still unclear. This is an important distinction as findings from Scotland suggest that males in the most deprived areas can only expect to be in good health up to the age of 43.9 years (Scottish Government, 2017). Whether interventions such as walking football could offer a means of improving this however, requires further investigation.

Given these issues, this pilot study aimed to examine the feasibility of recruiting males aged 50 years and over to an 8-week walking football programme. We aimed to assess recruitment and retention rates; participant characteristics; data collection engagement pre- and post-programme; and participant experiences. A sample of participants were also contacted one year after the initial 8-week programme to establish whether or not they had continued to be involved in walking football.

Method

Male volunteers aged 50 years and over were recruited to a newly-formed walking football group under the Community Trust wing of a Scottish Premiership football club: the sessions were free of charge. Participants were recruited via advertisement on the club website and official social media platforms (Facebook, Twitter) for supporters and followers of the club. Interested individuals were provided with an information sheet detailing the purpose, risks, and benefits associated with the study and were informed that they could withdraw at any

time. To be eligible for participation, participants were required to: 1) be male and 50 years of age or older; and 2) be willing to complete the study in its entirety. Eligible and willing participants were required to complete a physical activity readiness questionnaire (PAR-Q) prior to data collection and informed written consent was obtained from all participants. The study received institutional ethical approval and all procedures conformed to the declaration of Helsinki.

Study Design

This pilot study adopted a randomized-controlled design. Accordingly, participants were either allocated to the intervention group and partook in an 8-week walking football programme or were allocated to a control group and were placed on a waiting list to commence walking football after an 8-week delay. All participants were provided with basic PA and healthy-living guidance (2-page National Health Service leaflet) at baseline. A series of physiological and psychological outcome measures were then obtained during measurement sessions at baseline and again following 8-weeks (both groups).

Walking Football Programme

Walking football sessions were delivered once a week for 8 weeks by community coaching staff employed by the club. Sessions were 60 minutes in duration and took place in the evening on a synthetic pitch at the ground of the participating club. At the end of sessions, participants were invited into the facility for refreshments and the opportunity to socialise with other members.

Baseline Measures

Demographic characteristics. Self-reported items at baseline assessed age, ethnic origin, employment status, education level, marital status, and smoking status.

Activities of daily living. Measures of habitual PA were collected in both groups prior to and following the 8-week intervention or control period. In this regard, participants

were provided with a hip-worn accelerometer (GT3X+, ActiGraph, USA) that was attached to an elasticated waistband. Accelerometers were positioned on participants' right hip on the mid-auxiliary line who were instructed to wear the devices, except during water activities, for 7 days. Prior to distribution, accelerometers were initialized using the device software (Actilife v6.13.3, ActiGraph, USA), to collect data at a sampling frequency of 80Hz. Upon the return of the devices, data were downloaded using propriety software into 60 s epoch AGD files for subsequent analyses. Non-wear time was defined as a minimum of 60 minutes of continuous zero counts and days with at least 600 minutes wear time considered valid (Troiano et al., 2008). Participants required at least four valid days of measurement, one of which had to be at the weekend, in order to be included within the analyses. Cut-points previously published by Sasaki et al. (2011) for the vector magnitude were then used to define moderate-vigorous (>2690 cpm) activity. Cut-points previously published by Kozey-Keadle et al. (2011) for the vertical axis (≤ 150cpm) employing the low frequency extension were used to estimate sedentary time. Finally, only data captured between 06:00 am and 10:00 pm were included in the analysis.

Outcome Measures

All outcome measures were obtained at baseline in both the intervention and control groups with repeat measurements being obtained following the 8-week intervention or control period. Outcome measures collected included: Body mass index (BMI); Blood Pressure (BP); Psychological wellbeing and quality of life, via validated paper-based self-report questionnaires (Table 1); and Cardiorespiratory fitness (CRF). The CRF of participants was assessed using the validated Step Test and Exercise Prescription (STEP) tool, the protocol for which has been published elsewhere (Stuckey, Knight, & Petrella, 2012). Established cut-offs for BMI were used to classify participants as overweight (25.0 – 29.9 $kg.m^2$) or obese (> 30 $kg.m^2$) (Batsis et al. 2016). Measures of systolic/diastolic BP

were used to categorise participants' BP as normal (80-120/60-80 mmHg); pre-hypertensive (120-139/80-90 mmHg); stage 1 hypertensive (140-159/90-99 mmHg); and stage 2 hypertensive (>160/>100 mmHg) (Handler, Zhao, and Egan, 2012). Normative values for maximal oxygen update capacity ($\dot{V}O^2max$) were used to classify participants' CRF as poor (50-59 years: ≤ 34 ml·kg·min^{-1}; 60-69 years: ≤ 30 ml·kg·min^{-1}), fair (50-59 years: 35-37 ml·kg·min^{-1}; 60-69 years: 31-34 ml·kg·min^{-1}), good (50-59 years: 38-42 ml·kg·min^{-1}; 60-69 years: 35-38 ml·kg·min^{-1}), and excellent (50-59 years: 43-49 ml·kg·min^{-1}; 60-69 years: 39-45 ml·kg·min^{-1}) (Knight, Stuckey, & Petrella, 2014). Crucially, all of these measures were collected together in one visit onsite at the football club facility, and did not require participants to travel to a research facility.

Table 1. Psychological outcome measures description and evidence of internal consistency using Cronbach α

Variable	Instrument	Scale Description	Cronbach α
Mental wellbeing	Warwick-Edinburgh Mental Wellbeing Scale (Tennant et al., 2007)	Scale assesses mental wellbeing and comprises of 14 positively worded statements with five response categories from "none of the time" to "all of the time".	0.93
Self-esteem	Self-esteem scale (Rosenberg, 1965)	Measures self-esteem. The 10 items are rated on a 4-point scale ranging from "strongly disagree" to "strongly agree".	0.84

Social support via friendship	Social support via friendship subscale from the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farley, 1988)	Short subscale measures social support obtained via friendship. The 4 items are rated on a 7-point scale from “very strongly disagree” to “very strongly agree”.	0.91
Loneliness	Three-Item Loneliness Scale (Hughes, Waite, Hawkley, & Cacioppo, 2004)	Short scale validated for the measurement of loneliness. The 3 items are rated on a 3-point scale from “hardly ever” to “often”.	0.84
Physical functioning	Physical functioning subscale from the RAND 36-Item Short Form Health Survey	Subscale measures perceptions of physical functioning. The 10 items are rated on a 3-point scale from “yes, limited a lot” to “no, not limited at all”.	0.82
Role limitations due to physical health	Role limitations due to physical health subscale from the RAND 36-Item Short Form Health Survey	Subscale measures perceptions of role limitations due to physical health. The 4 items are rated on a 2-point scale from “yes” to “no”.	0.95

Semi-structured Interviews

A representative sample of participants from the intervention group were invited to complete a semi-structured interview after the programme (n = 6). A schedule of open-ended questions was used to guide the interview and explore participants' experiences of the walking football programme, such as: reasons for first attending; reasons for continuing to attend; and views on the programme itself. Interviews were conducted in-person (n = 3) or over the phone (n = 3) with researchers experienced in the collection of qualitative data and lasted for an average of 36 minutes (range: 17 – 71 minutes). With participants' permission, interviews were audio recorded. The same participants were also contacted for a brief follow-up interview 1 year after the programme had ended.

Analyses

As the focus of this pilot study was to examine the acceptability and feasibility of recruitment and retention to the walking football programme, this study was not appropriately powered to make statistical inferences regarding changes in outcome measures. Nevertheless, this data has been reported for descriptive purposes, and is presented as mean ± standard deviation (SD).

Qualitative data obtained during semi-structured interviews were analysed using a general inductive approach previously described by Thomas (2006). During the first stage of this process, audio-recordings were transcribed verbatim and transcripts were subsequently double-checked to ensure accuracy. General concepts were outlined through line-by-line analysis of the transcripts, subsequently categories of emerging themes were developed, and quotations were then assigned to relevant categories of higher generality. In order to assess the validity of the aforementioned analyses, credibility checks of the data were undertaken where researchers discussed and confirmed the allocation of raw data units to specific categories through constructive debate.

Results

Participant Recruitment and Retention

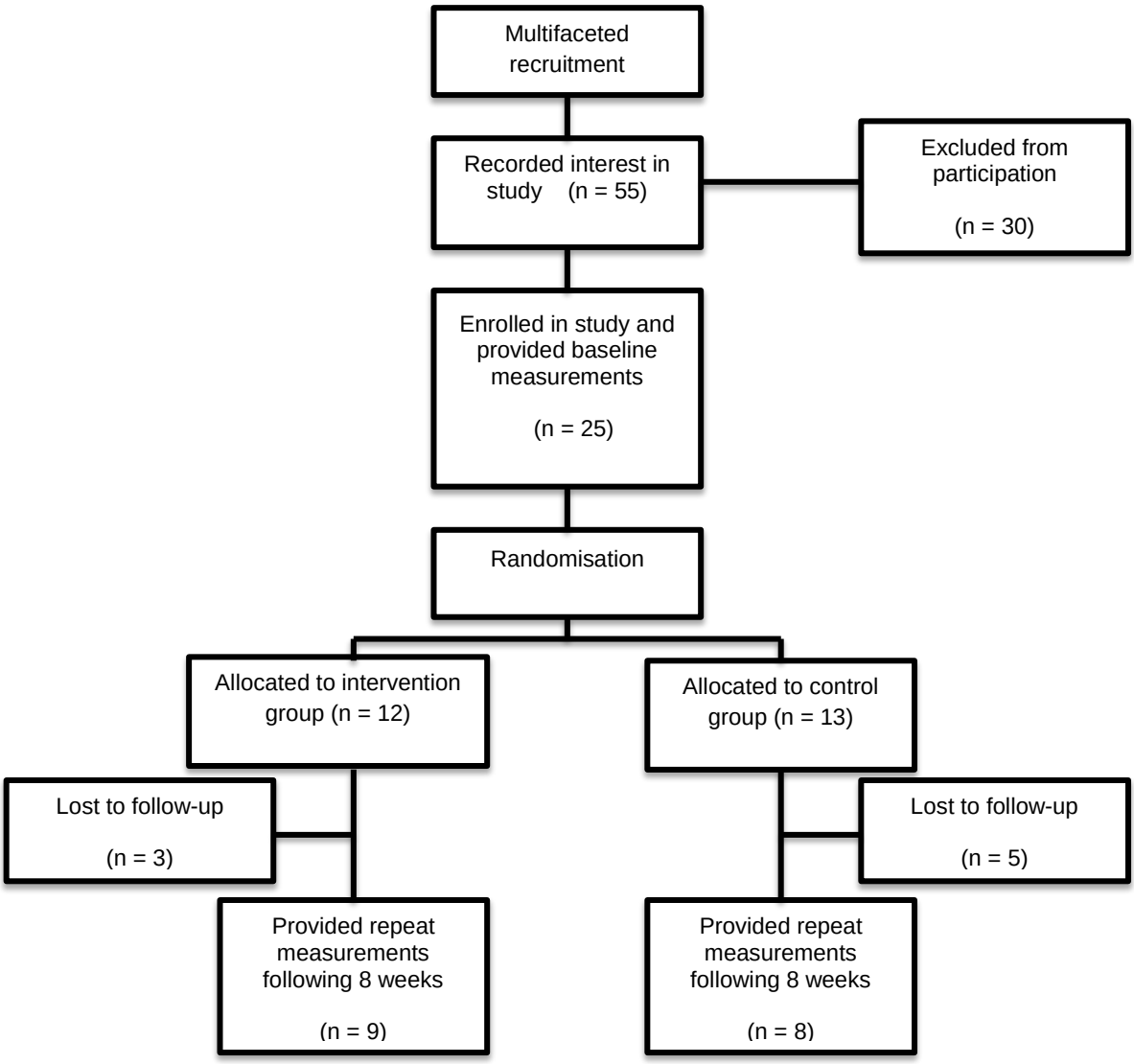

Figure 1. CONSORT diagram of the flow of participants through the intervention.

In total, the recruitment strategy generated interest from 55 males of which 30 did not participate due to various extenuating circumstances. Of the 25 individuals (intervention: n = 12; control: n = 13) who provided informed consent and completed baseline measurements,

16 (intervention: n = 9; control: n = 7) completed measurements at the 8-week follow up. Reasons for drop out included family emergencies (n = 2), work commitments (n = 2), and personal health complications unrelated to the study (n = 2). No subsequent contact was made by the remaining participants (n = 2) as to explain their reasons for dropping out. A relatively high retention rate of 68% was therefore achieved in the present study.

Participants were asked to indicate their motivation to take part in walking football. Ninety per-cent of participants reported that they wanted to 'improve fitness and health' whilst 50% stated that the key attraction was to 'play football again'. A number of participants had not been involved in organised sport for decades and the opportunity to engage in some form of football was the main aspect that attracted them to walking football:

> *I can't have any physical contact on my left leg. I knew that I couldn't play either five-a-side football or 11-side-football because of the physical contact aspect of it. So walking football was an opportunity for me to still play the game that I really enjoy without the physical contact.* (Participant 1)

Participant Characteristics

Table 2. Baseline characteristics of participants allocated to the intervention and control groups

	Intervention group (n = 12)	Control group (n = 13)	Total sample (n = 25)
Age (years)	56 (4.0)	60 (6.0)	58 (6.0)
Ethnic origin			
White (British, Scottish, Irish, or other)	12 (100.0)	12 (92.0)	24 (96.0)
Other	0 (0)	1 (8.0)	1 (4.0)

Scottish index of multiple deprivation (% living in quintiles)			
1 (most deprived)	4 (33.3)	2 (15.4)	6 (24)
2	3 (25.0)	3 (23.1)	6 (24)
3	0 (0)	2 (15.4)	2 (8)
4	2 (16.6)	3 (23.1)	5 (20)
5	3 (25)	2 (15.4)	5 (20)
Missing	0 (0)	1 (7.7)	1 (4)
Employment status			
Paid work	6 (50.0)	11 (84.6)	17 (68.0)
Not working *	2 (16.6)	0 (0)	2 (8.0)
Retired	4 (33.3)	2 (15.4)	6 (24.0)
Education			
No qualifications	1 (8.3)	0 (0)	1 (4.0)
Standard grades or Scottish Highers	4 (33.3)	4 (30.8)	8 (32.0)
Vocational or HNC or HND	4 (33.3)	4 (30.8)	8 (32.0)
University education	1 (8.3)	3 (23.1)	4 (16.0)
Missing	2 (16.6)	2 (15.4)	4 (16.0)
Marital status			
Married	10 (83.3)	9 (69.2)	19 (76.0)
Living with partner	1 (8.3)	2 (15.4)	3 (12.0)
Other (single, divorced, or widowed)	1 (8.3)	2 (15.4)	3 (12.0)
Smoking status			
Smoker	2 (16.6)	1 (7.7)	3 (12.0)
Non-smoker	6 (50.0)	7 (53.8)	13 (52.0)

Missing	4 (33.3)	5 (38.5)	9 (36.0)
BMI			
Overweight	4 (33.3)	6 (46.2)	10 (40.0)
Obese	8 (66.7)	7 (53.8)	15 (60.0)
BP			
Pre-hypertensive	2 (16.7)	0 (0.0)	2 (8.0)
Stage 1 hypertension	2 (16.7)	6 (46.2)	9 (36.0)
Stage 2 hypertension	8 (66.7)	7 (53.8)	14 (56.0)
CRF			
Poor	2 (16.7)	5 (38.5)	7 (28.0)
Fair	5 (41.7)	4 (30.8)	9 (36.0)
Good	3 (25.0)	4 (30.8)	7 (28.0)
Excellent	2 (16.7)	0 (0.0)	2 (8.0)
Physical activity and sedentary behaviour			
Physically inactive (< 150 min MVPA/week)	3 (25.0)	1 (9.1)	4 (17.4)
Physically active (≥ 150 min MVPA/week)	9 (75.0)	10 (90.9)	19 (82.6)
Mean daily sedentary time (hours)	9.8 (1.9)	9.0 (1.0)	9.4 (1.5)
Self-reported psychological wellbeing and quality of life			
Self-esteem	21 (3)	25 (3)	23 (4)
Social support via friendship	5 (1)	6 (1)	5 (1)
Loneliness	4 (2)	3 (1)	4 (2)
Mental wellbeing	48 (7)	55 (6)	52 (8)
Physical functioning	88 (18)	92 (10)	90 (14)
Role limitations due to physical health	85 (34)	94 (21)	89 (28)

Data are presented as mean (SD) or number (%). HNC = Higher National Certificate. HND = Higher National Diploma. BMI = body-mass index. BP = blood pressure. CRF – cardiorespiratory fitness. MVPA = moderate to vigorous physical activity. * Due to long-term sickness or disability.

For baseline measures of habitual PA, instances of device malfunction (n = 2) accounted for slight data attrition. As all participants satisfied the specified wear time criteria, accelerometer data were available for 12 and 11 participants in the intervention and control groups, respectively. When viewing the entire sample, our data suggest that whilst the majority of participants (82.6 %) exceeded current PA guidelines, participants also demonstrated high levels of sedentary behaviour before they engaged with this programme. Based upon BMI, all participants in the present study were classified as being either overweight (n = 10) or obese (n = 15). Additionally, baseline measurements highlighted all participants to exhibit a BP outside normal ranges. Specifically, participants were categorized as pre-hypertensive (n = 2), stage 1 hypertensive (n = 8), and stage 2 hypertensive (n = 15). Finally, levels of CRF were found to be varied amongst participants at baseline with participants falling under the categories of *poor* (n = 7), *fair* (n = 9), *good* (n = 7), and *excellent* (n = 2).

Intervention Feasibility and Acceptability

Of the nine participants in the intervention group who provided post-measurements, four had attended every walking football session, three had only missed one session, and two participants had missed two sessions. Adherence to the walking football programme was therefore found to be excellent with a mean attendance of 90% (range: 75 – 100%). No adverse events were encountered by participants during the course of the walking football programme. Of the seven participants in the control group who provided post-measurements,

232 all commenced the walking football programme at the end of the 8-week control period,
233 further highlighting walking football to be an attractive form of PA for the studied cohort.

234 **Changes in outcome measures**

235 Outcome measures obtained from participants at baseline and following the 8-week
236 intervention or control period are presented in Table 3.

Table 3. Changes from baseline in outcome measures

	Intervention group (n = 9)		Control group (n = 7)	
	Baseline	Post-measure	Baseline	Post-measure
Body mass (kg)	100.6 (14.0)	101.1 (14.6)	98.0 (17.4)	97.3 (16.9)
BMI ($kg \cdot m^2$)	33.4 (6.3)	33.7 (6.5)	32.1 (6.2)	32.0 (6.3)
Systolic BP (mmHg)	158 (20)	147 (17)	160 (14)	151 (11)
Diastolic BP (mmHg)	89 (13)	84 (11)	93 (6)	88 (6)
$p\dot{V}O_{2max}$ ($ml \cdot kg \cdot min^{-1}$)	35.52 (5.56)	36.79 (4.31)	33.51 (4.36)	35.47 (4.60)
Mean daily MVPA (min)	50 (32)	52 (29)	47 (20)	47 (20)
Self-esteem	21.11 (3.37)	19.89 (4.48)	25.38 (3.46)	25.88 (3.98)
Social support via friendship	5.11 (1.02)	5.33 (1.38)	5.25 (1.66)	5.88 (0.60)

Loneliness	4.56 (1.94)	4.78 (1.92)	3.50 (1.41)	3.38 (1.06)
Mental wellbeing	46.22 (7.46)	46.89 (8.37)	54.50 (6.72)	56.63 (7.96)
Physical functioning	85.00 (19.69)	82.22 (17.52)	90.63 (11.48)	91.88 (8.94)
Role limitations due to physical health	88.89 (33.33)	77.78 (44.10)	100.00 (0.00)	100.00 (0.00)

Data presented as mean (SD). BMI = body mass index. BP = blood pressure. $p\dot{V}O_{2max}$ = predicted maximal oxygen uptake. MVPA = moderate-vigorous physical activity.

Qualitative data

Qualitative data aimed to investigate the experiences of those within the walking football programme; their personal perspective of the impact of this programme on their health and wellbeing; and why they remained involved. A number of thematic concepts were identified during qualitative analyses and these were reduced to 3 themes which can be viewed in Table 4.

Table 4. Qualitative Research Results

Theme	Example quotations
	(Participant 1) *It's good to meet some people that you don't know socially because one of the things you miss when you're not working anymore is you miss the social aspect of speaking to people, that's an important thing, and it can't be underestimated as you're getting older. The fact that you meet up with people regularly for a common purpose is really good.*

1. Social Interaction	(Participant 2) *Going back to the stadium for a cup of tea or a cup of coffee and having a chat. And it's people my own age, which is great. [But walking football is] an awful lot of fun. The group of guys, I mean, not become friends for life, but we're getting close to it, I mean, we bonded.* (Participant 3) *But I think that is the biggest bonus of it, when you meet people. You wouldn't imagine at my age, and everybody else's age you would meet new friends and I have already got two people that I have went and met outside of football for just a bite to eat, I keep in regular contact, so I would say the bonuses of walking football are social.*
2. Group motivation to improve health	(Participant 6) *Personal health issues, we've always talked about what was wrong with us and what we're doing to get ourselves fitter. I always felt that these things come and go, you play for your team, you win, that's it. But what I'm finding here is people have a common goal to get well.* (Participant 3) *I have actually cut my cigarettes by 50 percent in less than 5 weeks. I'm not saying that you go there and a new way to stop smoking is play Walking Football, but I tend to find when you are doing things you have not got the time to smoke, and then when you come out you're not bothered about having a cigarette.* (Participant 2) *Yes, I admit that I'm overweight and I'm probably a tad lazy once I come home, but the chance of doing this on a Thursday has*

	given me a spark to the week.
	(Participant 6) *It felt like I was back 16 again, playing. I felt that kind of feeling when everything's going right.*
3. New lease of life	(Participant 2) *It's something to look forward to, it's not a chore, it's something that I really look forward to.*
	(Participant 3) *I started this, my own wife said she actually saw me get a little 'lift', I looked different. But I found that it gave me something to look forward to.*

Discussion

The walking football programme attracted men from all socioeconomic groups. Participants emanated from varying backgrounds regarding employment status, education, and marital status; however, only one participant originated from an ethnic minority group. Such findings highlight the potential of walking football to become a feasible option by which mid to older aged individuals, irrespective of their demographic characteristics, can participate in structured PA aimed at enhancing health and wellbeing.

Given that those over the age of 50 represent the most sedentary segment of the adult population and are consequently amongst those most heavily affected by chronic disease, our findings are promising in that walking football appears to be a feasible means by which older individuals, who were previously sedentary (Tremblay et al, 2017) can regularly participate in structured PA. In addition to proving effective at attracting older males who were

sedentary and presented with an array of comorbidities, adherence to the walking football programme was high with attendance rates of 90%. Interestingly, attendance rates in the current investigation are higher than the 58 – 77% typically observed during exercise interventions for older people and are likely reflective of the intervention content (Picorelli, Pereira, Pereira, Felício, & Sherrington, 2014). In line with Neilsen et al. (2014) who highlighted the enjoyment of the game and the social interactions it created to promote continued participation in football-related interventions, all interviewed participants in the present study stated their enjoyment at playing football again, with the social aspects of the walking football sessions emerging as a key theme. Whilst walking groups are popular with older adults, standard walking groups tend not to be gender-specific, or are targeted to women only, and this is reflected in the low numbers of older men who engage with standard walking interventions (Kassavou, Turner & French, 2013). For example, Paths for All, Scotland's Walking Charity, noted that between 2016 and 2017 vastly more females (77%) attended their standard health walks than males (23%) (Paths for All, 2017). In this pilot study 50% of participants noted their main motivation to take part in walking football was to 'play football again', and 100% of interviewees noted affiliation to a professional football club as a key attraction. Crucially, standard walking groups had not attracted these individuals, but they were drawn to this walking programme with a football link, and particularly a link to a professional football club. Nevertheless, whilst the pull of walking football appears to be supportive of high attendance rates, future research is needed to truly examine the adherence to walking football over longer periods with a larger sample.

All but two of the participants were hypertensive, and whilst the majority of participants may have met current PA guidelines, participants appeared sedentary as evidenced by a mean daily sedentary time of ~9.4 hours. Regular PA has been shown to be beneficial for reducing mortality in hypertensive individuals (Rossi, Dikareva, Bacon, &

Daskalopoulou, 2012). The high levels of sedentary time reported from the sample are notable given the growing body of evidence showing sedentary behaviour to be a risk factor for chronic disease and the development of cardiometabolic syndrome (Thorp, Owen, Neuhaus & Dunstan, 2011). All participants were classed as overweight or obese based on their BMI. Ryan (2010) has argued that a physically active lifestyle should be encouraged in overweight and obese individuals to reduce the risk of cardiovascular events as they age. Thus, a notable result is that this programme was able to attract hypertensive, sedentary, overweight and obese men over 50 to a regular PA programme, with 90% adherence over 8 weeks, and this was maintained beyond 8 weeks in some cases as noted below.

In addition to the high attendance rates observed, participants allocated to the intervention group were able to safely complete the programme without experiencing any adverse events, thus highlighting the appropriateness of walking football for older populations. Furthermore, the measures adopted in the current investigation were well tolerated by participants as evidenced by the number of individuals providing repeat measurements at both baseline and following the 8-week intervention or control period. The absence of negative feedback concerning outcome measurements may also support the acceptability of the measurements used within such populations. This is an important finding which substantiates the choice of measures used within this study, providing confidence that in future studies, participants are likely to adhere to the study protocol.

Qualitative findings indicated that a major attraction to this PA programme, and a reason for sustained engagement, was the opportunity for social interaction with similar people. Theme 1 shows that participants appreciated the optional social event (refreshments in the facility) after every session with men of a similar age. The participants suggested that this was something missing from their lives prior to engagement in walking football, and it was a reason why they maintained their involvement. These findings also show that though

this group of older males would traditionally be categorised as a hard-to-reach group for healthy activity engagement, it is worth aligning this with the argument of Baker (2012) who suggests these hard-to-reach groups of older males are better categorised as 'unreached', in that if they are provided with the right environment they will become motivated to improve their health. Themes 2 and 3 showed that there was a distinct group motivation and enthusiasm to improve health throughout, and beyond, this programme. All participants continued with walking football after the initial 8-week research period.

The 6 interviewees were contacted one year after the programme to investigate their exercise habits beyond this intervention. After the initial 8-week programme, walking football was still offered at the same time and place in the professional football club for 1 year. When the interviewed participants were contacted 1 year later it was noted that all (n = 6) were still engaged in walking football. Some participants therefore showed a willingness to engage in this activity long-term, and they reported similar reasons for their maintained engagement 1 year later as were originally noted in Table 3. This suggests that walking football could be a particularly cost-effective intervention. Initial costs are needed to establish the programme in the community and recruit individuals, but beyond this the social links and opportunity to be part of a 'football team' means that many men will maintain engagement even after the intervention has been removed. This shows that walking football may well be a way to attract and retain a traditionally hard-to-reach group of overweight, sedentary, hypertensive over 50s males in long-term PA.

As this was a pilot feasibility study, the primary limitations of the current investigation reside in our small sample size and short duration of the intervention. Though pre and post measures were collected from all participants to ascertain feasibility of the chosen design, our small sample size meant that statistical tests lacked adequate power to detect differences in outcome measurements. A descriptive assessment may suggest that BMI

remained unchanged in both groups whilst showing trends regarding small improvements in MVPA and blood pressure as a result of participating in walking football. Nevertheless, the qualitative data suggested a positive shift in participants' outlook and wellbeing, and the recruitment and retention data demonstrates the potential for walking football to attract and retain this target group in PA long term, with at least half of participants maintaining engagement for at least one year. This suggests further research is needed. To gain a comprehensive understanding of the impact of walking football on the health of individuals over the age of 50 years, future interventions should incorporate larger sample sizes whilst heeding the attrition rates reported here. Suitably powered evidence on the efficacy of walking football is highly warranted, given the potentially wide-reaching attraction and cost-effectiveness of this form of PA.

Conclusion

This pilot study aimed to examine the feasibility of recruiting and retaining males aged 50 years and over to an 8-week walking football programme and retaining them for data-collection purposes. The programme recruited participants from a variety of demographics, representing all areas of deprivation, including those identified as the two most deprived areas. All participants were classified as being either overweight or obese, all had BPs outside normal ranges, all but 2 were classed as hypertensive, and when mean daily sedentary time was measured participants were classified as sedentary. Based on this, the mass appeal of walking football is evident as it attracted a wide range of demographics, but crucially was able to attract and retain those at risk of developing chronic disease because of being overweight or obese, sedentary, and/or hypertensive and physically inactive. A relatively high retention rate of 68% was achieved for post-measures in the present study. Participants noted that the data collection process was made easier by measures being collected onsite at the football club rather than in a distant research facility. Adherence to the

walking football programme was 90%: higher than the 58 – 77% typically observed during exercise interventions for older people, and each of the participants interviewed from the intervention group (n = 6) maintained engagement with walking football for at least one year after the intervention was removed. Walking football therefore presents itself as a feasible method of recruiting and retaining males aged 50 years and over to a PA programme, and for the collection of the suggested pre and post outcome measures, though a level of attrition is to be expected. Future research should incorporate larger sample sizes to accommodate for expected attrition levels and to produce suitably powered data to better understand the efficacy of walking football for improving the health of males over the age of 50 years.

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